

What is claimed is:

1. A method of producing a motorcycle tire by providing an uncured tire comprising a radial carcass ply extending between a pair of bead portions, a belt made of uncured rubberized steel cord members laid on an outer peripheral face of the carcass ply so as to arrange the steel cord members substantially in parallel to an equatorial plane of the tire, and a tread rubber and sidewall rubbers laid on outer surfaces of the belt and an uncovered portion of the carcass ply, placing the uncured tire in a mold and then subjecting it to vulcanization under a given internal pressure, characterized in that steel cord members each having either a single twisting construction of 2-7 filaments or a strand bundle construction using such a single twisting construction, and including a space between the mutual filaments over a full length of the cord is used in the belt, and that the belt is enlarged in a radial direction within a range of holding the space between the mutual filaments in the steel cord when the uncured tire is pushed onto an inner face of the mold under an inflation of the internal pressure, and that the vulcanization of the uncured tire is completed at a state that a coating rubber for the steel cord members in the belt freely fluidizing at a high temperature under a high pressure is penetrated into the full space between the mutual filaments and such a rubber penetration is held by heating the uncured tire.

2. The method according to claim 1, wherein the steel cord member used in the belt satisfies a relation of load-elongation curve when the elongation is plotted on an abscissa and the load is a load in an axial direction of the cord that an elongation ranging from a load of zero to a given load indicates a linear gentle gradient and an elongation ranging from a load exceeding the given load to a load corresponding to 70% of a breaking load indicates a linear steep gradient and a connecting line between terminal and start ends of these gradient lines indicates a downwardly convex curve having a small curvature, and a tensile force of a steel cord in a belt of a vulcanized tire after assembled onto an nominal rim but before filling with an nominal internal pressure is rendered into a range of loads corresponding to the elongation on the linear gentle gradient in the above relation curve.

3. The method according to claim 1, wherein the steel cord member used in the belt has an elongation at break of 3.0-6.0%, and an elongation range

corresponding to both ends of the curved connecting line of small curvature in the above curve of the steel cord member occupies at least 5% of the elongation at break.

4. The method according to claim 1, wherein the steel cord member used in the belt has an elongation at break of 3.0-6.0%, and an elongation range corresponding to both ends of the curved connecting line of small curvature in the above curve of the steel cord member occupies at least 10% of the elongation at break.

5. The method according to claim 1, wherein the steel cord member has a space in a central portion at a section of the cord over a full length thereof, and at least one space between filaments communicating from the central space to an exterior of the steel cord member is existent over the full length of the cord.

6. The method according to claim 1, wherein one or more steel cord members for the belt are previously coated with an uncured rubber under a condition of tensile force within a range of holding the space, and the one or more steel cord members coated with the uncured rubber are helically and successively wound on the outer peripheral face of the radial carcass ply under the condition of tensile force within the range of holding the space to form the belt of one or more layers.

7. The method according to claim 1, wherein a rubber sheet covering the steel cord member for the belt is previously laid on an outer periphery of the radial carcass ply, and one or more steel cord members for the belt are successively and helically wound on the rubber sheet under a condition of tensile force within a range of holding the space and thereafter a coating rubber sheet is laid on the helically wound steel cord member to form a belt of one or more layers.

8. The method according to claim 1, wherein the steel cord member used in the belt has a cord diameter of not less than $d\{(1/\sin \pi/N) + 1\} \times 1.4$ (mm) when the number of filaments is N and a diameter of the filament is d (mm).

9. The method according to claim 1, wherein when the uncured tire is pushed onto the inner face of the mold under an inflation of the internal pressure, an enlarging ratio of diameter at full width of the belt is within a range of 0.1-1.0%, and an enlarging ratio of diameter in each side region connecting to a

central region of the belt in the widthwise direction is made smaller than an enlarging ratio of diameter in the central region.

10. The method according to claim 9, wherein the enlarging ratio of diameter in the central region of the belt in the widthwise direction is within a range of 0.4-0.8%.

11. The method according to claim 1, wherein at a section of the uncured tire, a ratio of maximum height (hc) up to a section center of the steel cord member in the central region of the belt as measured from a straight line passing through both ends of the central region of the belt in the widthwise direction thereof to distance (dc) between centers of the steel cord members located at the outermost ends of the central region is within a range of 0.20-0.40, and a ratio of maximum height (hs) up to a section center of the steel cord member in each side region of the belt as measured from a straight line passing through both ends of the each side region to distance (ds) between centers of the steel cord member located at both ends of the each side region is made smaller than the above ratio (hc/dc).

12. The method according to claim 1, wherein when the uncured tire is pushed onto the inner face of the mold provided with a rib forming a groove in the tread rubber, the enlarging ratio in the central region of the belt is made smaller than a ratio of rib height to a radius of a rib base portion in the inner face of the mold corresponding to the central region.

13. The method according to claim 1, wherein the uncured tire is subjected to vulcanization by using the mold so that a ratio of maximum height of an outer surface of the tread rubber as measured from a straight line connecting both ends of the tread rubber in the widthwise direction to distance between both ends of the tread rubber in the widthwise direction is within a range of 0.20-0.40 at a section of a tire after the vulcanization when the tire is assembled onto an nominal rim and inflated under an nominal internal pressure.

14. A tire for a motorcycle comprising a tread portion, a pair of sidewall portions, a pair of bead portions, a carcass of one or more plies of radial arrangement of rubberized cords reinforcing these portions, and a belt reinforcing approximately whole region of the tread portion on an outer periphery of the carcass and comprised of one or more rubberized layers containing steel cords

arranged substantially in parallel to an equatorial plane of the tire, characterized in that the tire is produced by a method as claimed in any one of claims 1 to 13, and that the steel cord in the belt has a single twisting construction having 2-7 filaments and one or more penetration portion for coating rubber between mutual filaments over a full length of the cord, and that when the tire is assembled onto an nominal rim before the inflation of an nominal internal pressure, the steel cord in the belt has a tensile force applied thereto satisfying a relation of load-elongation curve when the elongation is plotted on an abscissa and the load is a load in an axial direction of the cord that an elongation ranging from a load of zero to a given load indicates a linear gentle gradient and an elongation ranging from a load exceeding the given load to a load corresponding to 70% of a breaking load indicates a linear steep gradient and a connecting line between terminal and start ends of these gradient lines indicates a downwardly convex curve having a small curvature.

15. A tire according to claim ~~13~~¹⁴, wherein the steel cord in the belt when the tire is assembled onto an nominal rim before the inflation under an nominal internal pressure has an elongation by tensile force applied thereto that a value of elongation in a full width of the belt is 0.20-0.85% and an elongation in a central region of the belt is larger than an elongation in each side region with respect to the central portion viewing from the curve of load and elongation in the steel cord member.

16. A tire according to claim 14, wherein the steel cord in the central region of the belt when the tire is assembled onto an nominal rim before the inflation under an nominal internal pressure has an elongation by tensile force applied thereto that a value of elongation in a full width of the belt is 0.30-0.80% viewing from the above relation of load and elongation.

17. A tire according to claim 14, wherein the steel cord in the belt when the tire is assembled onto an nominal rim before the inflation under an nominal internal pressure satisfies that a range of elongation in the curve of the connecting portion has a value of not less than 5% of an elongation at break viewing from the above relation of load and elongation in the steel cord member.

18. A tire according to claim 14, wherein the steel cord in the belt when the tire is assembled onto an nominal rim before the inflation under an nominal

internal pressure satisfies that a range of elongation in the curve of the connecting portion has a value of not less than 10% of an elongation at break viewing from the above relation of load and elongation in the steel cord member.

19. A tire according to claim 14, wherein the carcass comprises one or more rubberized plies of radially arranged organic fiber cords, and the belt comprises one or more layers formed by helically winding one or more steel cords arranged substantially in parallel to an equatorial plane of the tire on an outside of the carcass in a radial direction thereof in a coating rubber so that a ratio of maximum height up to an outer surface of a tread rubber as measured from a straight line connecting both ends of the tread rubber in the widthwise direction to distance between both ends of the tread rubber in the widthwise direction thereof is within a range of 0.20-0.40.

20. A tire according to claim 14, wherein the steel cord member used in the belt has a cord diameter of not less than $d\{(1/\sin \pi/N) + 1\} \times 1.4$ (mm) when the number of filaments is N and a diameter of the filament is d (mm).